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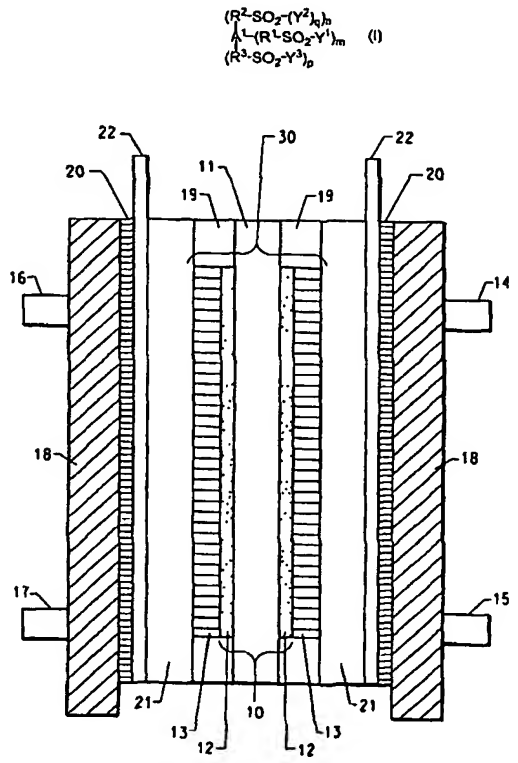
[Continued on next page]

(54) Title: SULFONIMIDE CONTAINING COMPOUNDS AND THEIR USE IN POLYMER ELECTROLYTE MEMBRANES FOR ELECTROCHEMICAL CELLS



(57) Abstract: A compound having the general structure (I), wherein A^1 is a monovalent, divalent, or trivalent aromatic heterocyclic group comprising heterocyclic rings; R^1, R^2, and R^3 are divalent fluorinated groups; m, n, and p are 0 to 3, with the proviso that m + n + p is equal to 1, 2, or 3 so that the carbon atoms of the heterocyclic rings are fully substituted by acidic fluorinated sulfonyl-containing groups; q is 0 or 1; Y^1 is -OH, $-NH-SO_2-R^4$ wherein R^4 is a monovalent fluorinated group, -NH-, $-NH-SO_2-R^5-SO_2-NH-$, or $-NH-SO_2-R^6-A^2-R^7-SO_2-NH-$, wherein A^2 is a divalent heterocyclic group and R^5, R^6, and R^7 are divalent fluorinated groups; and Y^2 and Y^3 are -OH or $-NH-SO_2-R^4$; with the proviso that when m and n are each equal to 1, p is 0 to 1, and q is 0, Y^1 is selected from the group consisting of -NH-, $-NH-SO_2-R^5-SO_2-NH-$, and $-NH-SO_2-R^6-A^2-R^7-SO_2-NH-$. By compound is meant either a small molecule or a repeat unit of a polymer. The invention also provides a solid polymer electrolyte membrane, a membrane electrode assembly, a gas diffusion electrode, an electrocatalyst coating composition, and a fuel cell.

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